

Governor's STEM Academy Brief



Office of Career and Technical Education Services

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The purpose of this monthly brief is to provide information, resources, and a networking vehicle to support the STEM (science, technology, engineering, and mathematics) Academies in Virginia.

GOVERNOR'S STEM ACADEMIES SPOTLIGHT

Loudoun Governor's Career and Technical Academy (LGCTA) at Monroe Technology Center (Loudoun County Public Schools)

- Monroe Technology Center received a \$500 ExxonMobil Educational Alliance grant to fund their mathematics and science programs at Loudoun Governor's Career and Technical Academy. The ExxonMobil Educational Alliance grants are designed to provide Exxon retailers with an opportunity to invest in the future of their communities through neighborhood schools.
- Joining over thirty classes in the United States and abroad, Monroe Technology Center's Biotechnology and Environmental Plant Science students are participating in an online program, PlantingScience.org, which pairs student teams with a scientist. Students engage in plant-genetics research through design-based scientific inquiry, technology, and online mentorship. Follow their experiments and uploads [online](#).

CAREER LINKS

[Hispanics and African Americans Underrepresented in STEM Careers](#)—The *Trailblazers* blog provides a U.S. Commerce Department report and adds Virginia data.

[Job Demands by Career Cluster](#)—The Center on Education and the Workforce forecasts job opportunities and skill requirements through 2018, broken down by the 16 career and technical education clusters of the Carl D. Perkins Act of 2006.

[Manufacturing Institute 2011 Skills Gap Report](#)—The survey results provide insights into the talent gap and how manufacturers are responding. "Many industries, not just manufacturing, are feeling the talent crunch. It's been widely reported that high school students have demonstrated a lack of proficiency in math and science. But when we asked respondents what they considered to be the most serious skill deficiencies in their current employees, inadequate problem-solving skills topped the list. It was followed by a lack of basic technical training and inadequate basic employability skills. Notably, inadequate math, reading, and writing skills weren't seen as being as serious as other concerns" (p. 8).

[Mentor Program Introduces Students to STEM-Related Fields](#)—This article highlights the Arlington Career Center, Arlington County Public Schools, and the use of the national [Ace Mentor Program](#) to provide early career exposure, mentoring, and scholarships to high school students to encourage them to enter one of the three fields that make up the ACE acronym: architecture, construction, and engineering.

FOCUS ON TRANSPORTATION, DISTRIBUTION, AND LOGISTICS CAREER CLUSTER

Links provided by Virginia's CTE Resource Center, <http://www.cteresource.org/>.

[Automotive-Technology.com](#)—This link provides access to industry research reports on current industry topics, including Radio Frequency Identification (RFID), the evolution of China's automotive sector, and the changing standards of automobile design.

[Connecting Career Technical Education](#)—The Ohio Resource Center for Mathematics, Science, and Reading offers inquiry-based learning resources, including [multiple projects under the Transportation Systems area](#) and [one under Manufacturing Technologies, a logistics project](#).

[Go! Exploring the World of Transportation](#)—The Institute for Transportation at Iowa State University provides resources on transportation careers, links for [Tech Trends](#) in the field, and curriculum connections between academic subjects and transportation.

[Logistics Management: Critical Topics](#)—Visit this industry site for reports and news on many logistics functions and subfields, including air, motor, ocean, and rail freight; mobile and wireless systems; global trade, and sustainability.

[Material Handling Equipment Distributors Association](#)—See this association’s links for Advisors and Career Center and an [introductory video](#) about the material handling and logistics industry.

[Modern Materials Handling](#)—This industry site features white papers and current news on many materials-handling topics, such as conveyors and sorters, loading-dock equipment, mobile and wireless options, storage, containers, lift truck and fork lift, and warehouse ergonomics.

[Teaching Guide for Highway Bridge Project—Repair or Replace?](#)—Scroll down to the “Building a Bridge to Engineering Careers...” topic and click on the link for “Highway Bridge Project Teaching Guide.” This module provides five project-based transportation problems for student research teams to solve.

[Transportation Careers: A Resource for Teachers](#)—Transportation-related problem-based scenarios and ideas for new transportation units are available at this site from the U.S. Department of Transportation and the National Association of State Directors of Career and Technical Education.

[Transportation Logistical Operations](#) and [Transportation Logistical Support](#)—These two unit plans from Georgia Career, Technical, and Agricultural Education contain teaching resources for the technical skills and knowledge required in automotive technology instruction. Also, see Unit 13 in [Foundations of Engineering Technology](#) and Unit 8 in [Engineering Concepts](#).

[Transportation Outreach and Recruitment Resources](#)—The Institute of Transportation Engineers offers links to electronic presentations about transportation careers and an electronic database of transportation-related classroom activities and exercises, accessible by topic and grade level.

GRANTS

[STEM Funding Search Engine](#)—The STEM Grants site features news, updates, and a free downloadable guide to STEM educational grants for K-12, educational non-profits, and universities.

INSTRUCTIONAL STRATEGIES

[The Center for Occupational Research and Development](#) (CORD)—This organization worked with over 40 community college faculty to develop 60 integrated projects that focus on six STEM-related career clusters: Agriculture, Food, and Natural Resources; Health Science; Information Technology; Manufacturing; Transportation, Distribution, and Logistics; and STEM. Although the projects were designed for use in the community college classroom, many of them can be easily modified for use at the high school level. The projects are designed for use in both technical and academic courses; technical background material is provided for mathematics and science instructors. The STEM Transitions team at CORD offers faculty [professional development](#) for both community college and high school groups in several formats. Choose from one-hour webinars or single and multi-day workshops.

[Great Games That Use Physics](#)—When real-world physics are added to video games, they become much more entertaining; therefore, more developers are using physics to create compelling games.

[Teaching Study Skills—Ideas That Work](#)—Three educators share their tips and tricks for introducing students to better ways of studying effectively.

PARTNERSHIPS

[Finding and Keeping Employer Partners](#)—The November 2011 *Trailblazers* provides an overview of the California Career Academy Support Network that produces hundreds of resources to help schools identify and work with employer partners. Materials are easy to download and customize.

[John Tyler Community College/Rolls-Royce Partnership](#)—This front-page article describes a partnership between John Tyler Community College and Rolls-Royce that focuses on building a regional work force in advanced manufacturing. The program is designed to prepare students for careers in advanced manufacturing across many industries such as aerospace and defense, automotive die/mold, consumer products, medical, power generation and renewable energy.

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